BASIC AIR STUDY ON SWEDEN

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BASIC AIR STUDY ON SWEDEN

I. Civil Air Policy

As a result of almost 25 years of air transportation experience, (18)
Sweden has formulated a general policy of international air service based on free enterprise, a minimum of government subsidy, cooperation and reciprocity between nations, and as much freedom of the air as possible.

The government's policy regarding competition among national (1)
carriers is theoretically one of free competition but ABA has practically a monopoly on flying regular internal and international routes. Until present time, Swedish airlines have flown without hindrance or pressure from the government wherever foreign politics, available equipment, and airline economy has permitted. With the merger of ABA and SILA, however, the government may determine policy with respect to scheduled air carriers to a greater degree than formerly.

Sweden is a small country having limited resources and has there- (1,22)
fore cooperated with Norway and Denmark, with whom she is most closely associated geographically and culturally. Scandinavian Airlines System, of which the Swedish member is ABA, was formed in order that the equipment, personnel and facilities of the three countries could be pooled to effect more economic operation by avoiding concurrent traffic and unnecessary competition.

Although Sweden's air policy is not dominated by the US, Sweden (1)
closely follows aviation developments here, endeavors to profit by American experience and methods, and maintains standards equivalent to ours with respect to safety of flight.

On 5 May 1947, Sweden obtained one of the 21 seats on the (1,8)
council of ICAO. Sweden signed the ICAO Convention on 12 December 1944, deposited its instrument of ratification on 11 November 1945, and signed the Air Transport Agreement on 19 November 1945. She also participates actively in IATA.

Sweden prefers complete multilateral agreement and hopes (25, 26)
for that ultimately, but, nevertheless, concludes bilaterals on a purely reciprocal basis conforming to ICAO standards. Swedish policy is to "fly everywhere" under these conditions.

A point of strength in Swedish civil aviation is the cooperation (1)
with Norway and Denmark. This enables Swedish airlines to operate greater distances with greater capacity and frequency. A point of weakness is the dependence on foreign aircraft which in view of Sweden's dollar shortage may seriously limit Sweden's ability to purchase planes. Another point of weakness is the lack of trained pilots and flight personnel which requires SAS to employ foreigners (American and British) to operate and maintain aircraft.

II. Governmental Activities in Connection With Civil Aviation

The Royal Board of Civil Aviation was established in 1945 under the Ministry of Communications. It represents Sweden in all air policy matters in addition to controlling civil air operations within Sweden, including all construction of civil airfields, licensing of civil pilots, navigators and radio operators and the establishment, maintenance and operation of numerous aeroclubs throughout the country. The Board is generally considered to be honestly and sincerely administered although a severe shortage of personnel and the lack of experience has placed a handicap upon smooth administration of the organization. (1,7)

The Swedish government promotes the development and expansion of scheduled and non-scheduled air transport by granting loans from the Aviation Loan Fund for the purchase of aircraft. There is no subsidization of air carriers and aircraft manufacturing; however, subsidies are sometimes granted to private flying clubs for gliding purposes. The government owns 50% of the stock of ABA. (1)

III. Air Transport Companies

(1) Statistics on ABA and SAS operations:

Aktiebolaget Aerotransport (ABA) was organized in the spring of 1924 by private interests who held all the stock of the company until 1935 when the government obtained 97% ownership by subscribing to an entire new stock issue. All operations ceased during the war with the exception of service to Helsinki, Copenhagen, Berlin and Aberdeen. After 2 DC-3s were shot down in October 1943 by the Luftwaffe on the Aberdeen route, service was suspended until 5 March 1944 when the Swedes obtained a German guarantee of safe conduct. ABA was on strike from November 1947 until April 1948, at which time it combined with SILA. ABA reported a loss of 1.12 million kroner for 1947. The total traffic income during the year amounted to 30.09 million kroner. (20,27,36)

	1946	1947
Number of passengers	172,872	175,585
Kilos of postal matter	301,152	468,477
Kilograms of freight	2,670,013	3,848,272
Kilometers flown	6,749,236	8,804,916

Svensk Interkontinental Lufttrafik A. B. (SILA) was formed on 25 February 1943 by representatives of Swedish industrial and shipping concerns to permit Sweden to take full advantage of postwar intercontinental air transport. The government granted SILA the right to carry on intercontinental air traffic while ABA maintained domestic and European traffic. (20)

From an operational standpoint, the ABA-SILA merger became effective 18 April 1948. However, the capital merger was not effective until Riksdag approval on 1 July 1948. It is understood that the new merged company, which is known as ABA, has been capitalized at 60 million crowns, of which the government holds 50% while private interests own the other 50%. Foreigners are not allowed to own controlling or minor interests in Swedish aviation companies. The Chairman of the ABA Board is elected by government shareholders. Seven members of the Board are elected by the government and seven by the private interests. There is also an operations committee, of which the chairman is elected by private interests, two members by government shareholders, and two members by the private shareholders, which will actually direct policy. Aircraft owned by the company consists of 24 DC-3s, 2 B-17s, 5 DC-4s, 5 JU-52s and 5 DC-6s. ABA was granted a loan of 20.25 million Swedish crowns representing 90% of the purchase price of ten DC-6s from the Aviation Loan Fund. The entire order has been paid for and delivery accepted but four are remaining in storage at Santa Monica until ABA can negotiate for their resale. ABA also has a contract with SAAB for ten "Scandia-90" aircraft which are expected in the winter of 1949-50. (1,3,7,8, 19,24,28)

Scandinavian Airlines System.

The possibility of some form of joint endeavor by Scandinavian airlines for the North Atlantic operation had been under discussion for several years preceding the invasion of Norway and Denmark. While the trend of events had prevented consummation of the project, it was not entirely abandoned, and immediately after the liberation the discussions were renewed. Competition for the potential North Atlantic traffic promised to be exceedingly keen with three US carriers and the well established airlines of England, Holland, Belgium and France. The proximity of the Scandinavian terminals and the use of a single US terminal made joint operation practicable and more economical. Moreover, none of the companies alone was able to supply the necessary personnel, equipment and other facilities without a delay which would have been especially serious at the start of the competitive race. Further, the problems involved in trans-ocean flying were sufficiently new and different from those of the European and domestic services of the companies to indicate the feasibility of separating the two types of operations. This fact facilitated combining the trans-Atlantic operations of the three airlines. As a result, Scandinavian Airlines System (SAS) was organized 31 July 1946. The consortium remains closely dependent on the participating companies, Det Danske Luftfartselskab (DDL), Det Norske Luftfartselskab (DNL), and ABA (originally SILA), for the determination of policy and overall direction. The agreement runs until 31 December 1951 but can be terminated sooner. The Board of Trustees consists of six members, two appointed by each of the participating companies. They are appointed for one year and the Chairman is named in succession by DDL, DNL, and ABA. All profits and losses are divided among the three companies on the basis of their participation, that is, DDL 2/7, DNL 2/7, and ABA 3/7. All operations to the US subsequent to 31 July 1946 were conducted in the name of SAS. Service on the North Atlantic route was inaugurated on 17 September 1946 and the South Atlantic route began scheduled operations on 22 February 1947. (21, 37)

A special corporation, the SAS, Inc., has been established in the US with headquarters in New York. A similar subsidiary, the SAS, Ltd., is registered in Great Britain. The capital stock in these joint stock companies is owned by the participating companies in the same proportions as their share in SAS.

Personnel and equipment are made available to the consortium under separate charter agreements. Aircraft in operation by SAS consist of 7 DC-4s, 1 DC-3 training plane, and 7 DC-6s. It is not known whether SAS returned the DC-4s to the mother companies for use in European traffic on delivery of the DC-6s as planned. Four Boeing Stratocruisers have been ordered but SAS doesn't expect they will be in operation before the summer of 1949. (7,8,21,30)

Since pooling and collaboration are necessary for economic operation, the joint arrangement was extended on 18 April 1948 to include all the European and domestic routes being operated by ABA, DDL and DNL. The operation is now divided into two main divisions, ISAS (Intercontinental Scandinavia Airlines System) and ESAS (European Scandinavia Airlines System). ISAS exists today much in the same breakdown for operation and administration as did the original SAS (i.e., overseas traffic to US, South America and intermediate points). ESAS has been established to coordinate the remaining service (i.e., domestic and European). In ESAS each airline retains its corporate identity, but in all other respects the three companies function as one. While actual ownership of each plane rests with one of the individual companies (because ESAS has no legal corporate basis), each plane will carry the SAS insignia. Total capital behind the three companies amounts to about $40,000,000. Headquarters organization for ISAS remains in Stockholm but headquarters for ESAS are in Copenhagen. Technical services such as maintenance and overhaul are divided among the three countries: all DC-6s will be serviced at Bromma Airport, Stockholm; all DC-4s at Kastrup Airport, Copenhagen; DC-3s and other aircraft in the country of ownership. The business end of cargo has been placed at a Charter Center in Oslo. There are countless details yet to be worked out and officials estimate that it will be two years before all functions are completely coordinated. It is therefore too early to estimate the economies expected through consolidated operation in Europe but there is little doubt that financial benefits will be considerable. (7,8,[redacted], 23,[redacted])

The combined number of employees is 8,000. The staff consists chiefly of Scandinavians but it has been necessary to employ a certain number of Americans and Englishmen. At the overseas stations the personnel consists chiefly of foreigners, only the managers being Scandinavian. SAS maintains twenty offices throughout Europe, in addition to those in the US. With 82 aircraft, the combined SAS fleet represents one of the largest in the world, consisting of 13 DC-6s, 9 DC-4s, 48 DC-3s, 4 Vickers Vikings, 2 Sandringham Mark VI flying boats, and 5 JU-52s. Another Sandringham is on order. (8,16, 20,37)

(2) Airline Routes Flown:

	SAS External Routes:	Round trips per week (10)
1.	New York - Gander - Glasgow - Stavanger - Copenhagen - Stockholm - Helsinki	4
2.	New York - Gander - Glasgow - Oslo - Stockholm - Helsinki	3
3.	Stockholm - Copenhagen - Geneva - Lisbon - Dakar - Recife - Rio de Janeiro - Montevideo - Buenos Aires	2
4.	Stockholm - Copenhagen - Frankfurt - Geneva - Rome - Istanbul - Ankara - Baghdad - Teheran	Fortnightly
5.	Stockholm - Copenhagen - Frankfurt - Geneva - Nice - Rome - Brindisi - Athens - Istanbul - Ankara	7
6.	Gothenburg - Aalborg - Oslo - Stavanger - Bergen - Aalborg - Stavanger - Glasgow	4 *
7.	Stockholm - Oslo - Gothenburg - Aalborg - Oslo - Glasgow	3 *
8.	Stockholm - Copenhagen - Glasgow	4
9.	Copenhagen - London	3
10.	Oslo - Stavanger - Bergen - Stavanger - London	7
11.	Stockholm - Copenhagen - London	7
12.	Gothenburg - Aalborg - London	4
13.	Oslo - Stavanger - London	3
14.	Gothenburg - Aalborg - Amsterdam	3
15.	Stockholm - Copenhagen - Amsterdam	7
16.	Oslo - Kristiansand - Stavanger - Kristiansand - Amsterdam - Brussels (the return trip omits Stavanger)	3
17.	Stockholm - Copenhagen - Brussels	7
18.	Copenhagen - Paris	2
19.	Oslo - Paris	4
20.	Stockholm - Copenhagen - Paris	7
21.	Stockholm - Copenhagen - Paris - Lisbon	1
22.	Copenhagen - Geneva - Lisbon	2

23.	Stockholm - Helsinki	3
24.	Helsinki - Stockholm (one way)	6
25.	Helsinki - Malmo - Aalborg - Aarhus - Copenhagen - Frankfurt - Zurich (the return trip omits Helsinki, Aalborg and Aarhus)	7
26.	Oslo - Copenhagen - Helsinki - Stockholm - Gothenburg - Malmo - Aalborg - Aarhus - Copenhagen - Hamburg - Frankfurt - Zurich	7 **
27.	Zurich - Lyon	2
28.	Zurich - Marseille	3
29.	Stockholm - Copenhagen - Geneva	2
30.	Stockholm - Copenhagen - Oslo - Gothenburg - Malmo - Aalborg - Aarhus - Copenhagen - Frankfurt - Geneva - Nice	7 **
31.	Oslo - Copenhagen - Helsinki - Stockholm - Gothenburg - Malmo - Aalborg - Aarhus - Copenhagen - Hamburg - Frankfurt - Zurich	7 **
32.	Stockholm - Copenhagen - Oslo - Gothenburg - Malmo - Aalborg - Aarhus - Copenhagen - Frankfurt - Geneva	7 **
33.	Stockholm - Copenhagen - Frankfurt - Geneva (return trip stops at Malmo)	Fortnightly
34.	Helsinki - Stockholm - Oslo - Gothenburg - Malmo - Aalborg - Aarhus - Copenhagen - Geneva (the return trip omits Helsinki, Gothenburg and Aalborg)	2
35.	Stockholm - Copenhagen - Malmo - Aalborg - Aarhus - Copenhagen - Prague (the return trip omits Aarhus and stops at Gothenburg).	4
36.	Oslo - Gothenburg - Copenhagen - Malmo - Aalborg - Aarhus - Copenhagen - Prague	4 **
37.	Oslo - Copenhagen - Malmo - Gothenburg - Stockholm - Visby - Warsaw (the return trip omits Malmo)	2
38.	Copenhagen - Stockholm	46
39.	Copenhagen - Gothenburg - Oslo	14
40.	Copenhagen - Oslo	14
41.	Copenhagen - Gothenburg	21
42.	Copenhagen - Malmo	84

43.	Copenhagen - Aalborg	14
44.	Copenhagen - Aalborg - Kristiansand - Stavanger	7
45.	Copenhagen - Gothenburg - Karlstad	7
46.	Aalborg - Oslo	7
47.	Aalborg - Kristiansand - Stavanger	7
48.	Aalborg - Gothenburg	7
49.	Aarhus - Aalborg	3
50.	Gothenburg - Oslo	7
51.	Oslo - Stockholm	10

* Return trip omits Aalborg.
** Return trip omits Aarhus.

SAS Internal Routes:

1.	Stockholm - Sundsvall/Harnosand - Lulea	7
2.	Stockholm - Visby	14
3.	Stockholm - Norrkoping - Visby	7
4.	Stockholm - Karlstad	7
5.	Gothenburg - Stockholm	21
6.	Malmo - Stockholm	7
7.	Malmo - Gothenburg	7
8.	Karlstad - Gothenburg	7

SAS opened its Arctic service on 19 April 1948. Sandringham Mark VI flying boats operate from Stavanger via Bergen - Oslo - Trondheim - Bodø - Harstad to Tromsø. Float-equipped JU-52s fly from Tromsø via Hammerfest - Alta - Vodsø to Kirkenes. (6)

Foreign airlines servicing Sweden include: (10,38)

AIR FRANCE
AOA
BEA
CSA
AERO O/Y
KLM
LOT
SABENA
SWISSAIR
SAS

LAI, the Italian airline, completed its first proving flight on 19 July 1948 and expects to have 1 round trip fortnightly thereafter. (9)

(3) Air Facilities:

Airports and air navigation facilities are operated by the government through the Board of Civil Aviation. There are twenty airfields and two water aerodromes in Sweden. (1,8)

As Bromma Airport (near Stockholm), Sweden's principal airport, is becoming too small for intercontinental air traffic, a large airport is being constructed at Halmsjon (15 miles from Stockholm), and is expected to be completed in about five years. It has been decided that in the meantime the runways at Bromma will be able to receive DC-6s and work is continuing to make it suitable for Stratocruisers. A hanger to house DC-6s and Boeing Stratocruisers is now under construction at Bromma and is expected to be completed in July 1947. Its 9,300 square meter floor is claimed to make it the largest permanent hangar in Europe. (7,8)

IV. Bilateral Agreements

Fifth freedom type:

Argentina	18 Mar 48	(4,7,8,11,14)
Brazil	14 Nov 47	
Canada	27 Jun 47	
Czechoslovakia	15 Oct 47	
France	2 Aug 46	
Greece	8 Apr 47	
Iceland	20 Apr 45	
India	21 May 48	
Ireland	29 May 46	
Pakistan	6 May 48	
Portugal	6 Mar 47	
United Kingdom	27 Nov 46	
United States	16 Dec 44	

Interim:

Egypt		(5,9,12,13, 15,32)
Finland		
Iran		
Italy		
Spain		
Uruguay		

Company-government:

Denmark-Norway-Sweden - ABA-DDL-DNL	31 July 46	(11)
Switzerland-ABA	10 Sept 45	
Sweden-SWISSAIR	1 Feb 46	

Division of Traffic:

Poland	24 Aug 45	(7,8,11)
USSR	26 Oct 46	

Unknown:

Belgium	23 Nov 45	(7,8,11,33)
Netherlands	3 Nov 45	
Turkey	26 Jun 46	
Yugoslavia	6 Oct 47	

Being negotiated:

China	(7,34)
[redacted]	
Egypt	
Finland	
Iran	
[redacted]	
South Africa	
Spain	
[redacted]	
Uruguay	

V. Aeronautical Industry, Research and Education.

(1) Aeronautical Industry:

The government does not manufacture aircraft but military planes are manufactured under government contracts. Svenska Aeroplan (SAAB), which is privately owned, is Sweden's only aircraft factory. Airplane production is primarily military and heretofore foreign aircraft have been used exclusively by Swedish airlines. (1)

SAAB, whose headquarters is at Linkoping, was formed in 1937. In addition to manufacturing military airplanes, automobiles and other equipment, the company makes a light sport plane, the Safir, of which twenty-eight have been sold and twenty are now on the floor awaiting finishing as orders are received. (8,35)

The SAAB-90 (Scandia) is the Swedish version of a plane designed to compete with a DC-3. Normal capacity is 24 passengers with luggage, although a short range 32 seat layout is also offered. It will operate safely from small airfields and has a range of 800 miles with full load. The Scandia has a low-wing design with pronounced dihedral, a widely spaced nosewheel undercarriage, and oval section fuselage. The cabin is air conditioned but not pressurized. The prototype, whose maiden flight was made in November 1946, has been altered but the present model, the SAAB-90A2, has not yet made a test flight. The plane is powered by two Pratt and Whitney Twin-Wasp R-2180 engines. ABA has ten planes on order and regular deliveries should begin in August 1949. SAAB hopes for the production of two per month. (8,29)

The SAAB-91 is a three seat light civil monoplane, the prototype of which was due to fly in 1945. It is a low-wing cantilever monoplane of all-metal construction, mainly aluminum-alloy although steel plate will be used to cover the underside of the fuselage to ensure maximum safety for the occupants in the event of belly landing. The landing gear is of the retractable tricycle type. Originally designed as a two-seater, the prototype is being completed as a three-seater with the third seat behind the starboard front seat, making it possible to convert the two passenger seats into a bed so that the aircraft may be used as an ambulance. The prototype is being fitted with a 130 h.p. Gipsy-Major engine; estimated cruising speed will be 125 m.p.h.; and the range will be 625 miles. (35)

In 1944, SAAB converted five Flying Fortresses into 14 passenger transports for ABA. These aircraft had force landed in Sweden during the war and were allocated to ABA by the government under a loan arrangement with the U.S. government. ABA engineers lengthened the nose of the fuselage by three feet and completely refitted the rear fuselage with passenger accommodations, windows, entrance door aft, toilet, etc. (35)

The entire interior was sound-proofed and heated. The bomb-bay was converted into a freight compartment, using the bomb-hoist gear as a freight hoist.

Svenska Flygmotor A.B., at Trollhattan, was originally formed as the Nohab Flygmotorfabriker A.B., to manufacture Bristol "Mercury" and "Pegasus" engines under a license granted by the Bristol Aeroplane Co., Ltd., to the Swedish government. In 1941 the A.B.Volvo, of Gothenburg, the leading Swedish motor company, bought a controlling interest in the Nohab concern, bought outright the A.B. Ulvsunda Verkstader of Stockholm, and changed the name of the Nohabs Flygmotorfabriker A.B. to Svensha Flygmotor A.B., the resulting organization becoming the largest industrial engineering organization in Sweden with four well equipped factories at Trollhatten, Gothenburg (Main Volvo Works), Skovde (branch Volvo Works), and Ulvsunda, near Stockholm. The share capital has been increased from four to eight million kroner, all shares being held by A. B. Volvo (62.5%) and A. B. Bofors (32.5%). The Trollhatten plant is one of the most extensive in Sweden and is situated close to the largest electric generating stations in Europe, power being obtained from the waterfalls alongside the factory. The company is now building under license the Pratt and Whitney Twin-Wasp radial air-cooled engine and the Daimler-Benz DB 603 twelve-cylinder, inverted-Vee, liquid-cooled engine. Sweden has also procured licenses from England to construct Goblin and Ghost motors for its military aircraft. (17,20)

(2) Research:

The government operates its own aeronautical research and development facilities but does not subsidize private organizations. Sw. cr. 818,400 is appropriated to the Aeronautical Engineering Research Institute (Flygtchniska Forsoksanstalten) and SW. cr. 181,600 for aeronautical medical research. Appropriations are increasing. Aerodyhamics and tenacity are given the greatest emphasis. SAAB conducts its own aeronautical research but uses the wind tunnel of the Aeronautical Engineering Research Institute. The Institute primarily conducts research on military problems but occasionally gives advice to commercial airlines on special problems. (1)

(3) Education:

The government sponsors and subsidizes aeronautical education insofar as it operates the technical universities of Stockholm and Gothenborg as well as technical schools at which aeronautical engineering education is obtainable. (1)

Sw. Cr. 215,000 is appropriated by the government for the training of flight engineers at a special school at Molndal. (1)

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